

I. Amendments to the Claims

1-18. (Cancelled).

19. (Currently Amended) A condenser comprising:
a first manifold defining a first volume of space;
a second manifold defining a second volume of space that has a magnitude that is substantially the same as the magnitude of said first volume of space;
a core positioned between said first manifold and said second manifold, said core comprising:
a first set of condenser tubes that are in fluid communication with between said first manifold and said second manifold for carrying a refrigerant from said first manifold to said second manifold; and
a second set of condenser tubes that are in fluid communication with between said first manifold and said second manifold, for carrying said refrigerant from said second manifold to said first manifold;
said first set of condenser tubes having a first length and said second set of condenser tubes having a second length, said second length being greater than said first length; and
wherein a said refrigerant is present during normal operation of said condenser in a gas phase and a liquid phase within said first set of condenser tubes and said second set of condenser tubes, said liquid phase is contained exclusively within said first set of condenser tubes and said second set of condenser tubes irrespective of the thermodynamic conditions within said condenser.

20. (Original) The condenser of claim 19, wherein said condenser is a cross-flow condenser.

21. (Original) The condenser of claim 19, wherein said condenser is a downflow condenser.

22. (Original) The condenser of claim 19, wherein said second set of condenser tubes are supercooling tubes.

23. (Original) The condenser of claim 22, wherein the number of said first set of condenser tubes is greater than the number of said second set of condenser tubes.

24. (Original) The condenser of claim 19, further comprising corrugated fins attached to said first set of condenser tubes.

25. (Currently Amended) An air conditioning system comprising:
a moving vehicle comprising:
an engine;
a radiator positioned so as to cool said engine;
a condenser mounted to said moving vehicle so as to be positioned in front of said radiator, said condenser comprising:
a first manifold defining a first volume of space;
a second manifold defining a second volume of space that has a magnitude that is substantially the same as the magnitude of said first volume of space;
a core positioned between said first manifold and said second manifold, said core comprising:
a first set of condenser tubes that are in fluid communication with between said first manifold and said second manifold for carrying a refrigerant from said first manifold to said second manifold; and
a second set of condenser tubes that are in fluid communication with between said first second manifold and said second manifold, first manifold for carrying said refrigerant from said second manifold to said first manifold;

said first set of condenser tubes having a first length and said second set of condenser tubes having a second length, said second length being greater than said first length; and

wherein a said refrigerant is present in a gas phase and a liquid phase within said first set of condenser tubes and said second set of condenser tubes and said third set of condenser tubes, said liquid phase is contained exclusively within said first set of condenser tubes and said second set of condenser tubes irrespective of the thermodynamic conditions within said condenser.

26. (Previously Amended) The air conditioning system of claim 25, wherein said condenser is a cross-flow condenser.

27. (Previously Amended) The air conditioning system of claim 25, wherein said condenser is a downflow condenser.

28. (Previously Amended) The air conditioning system of claim 25, wherein said first manifold comprises a partition that divides said first manifold into an upper chamber that is in fluid communication with said first set of condenser tubes and a lower chamber that is in fluid communication with said second set of condenser tubes.

29. (Original) The air conditioning system of claim 25, wherein said second set of condenser tubes are supercooling tubes.

30. (Original) The air conditioning system of claim 29, wherein the number of said first set of condenser tubes is greater than the number of said second set of condenser tubes.

31. (Original) The air conditioning system of claim 25, further comprising corrugated fins attached to said first set of condenser tubes.

32. (Original) The air conditioning system of claim 25, further comprising a compressor that transmits said refrigerant to said condenser.

33. (Original) The air conditioning system of claim 32, further comprising an expansion valve that receives said refrigerant from said condenser.

34. (New) The air conditioning system of claim 25 wherein said first manifold includes portions defining an inlet chamber having an inlet, an outlet chamber having an outlet and a portion not communicating with said inlet and said outlet, and further comprising a third set of condenser tubes that are in fluid communication between said second manifold and said third portion of said first manifold not communicating with said inlet chamber or said outlet chamber and adapted to carry said refrigerant both to and from said third portion and both to and from said second manifold.

34. (New) The condenser of claim 19 further wherein said first manifold includes portions defining an inlet chamber having an inlet, an outlet chamber having an outlet and a portion not communicating with said inlet and said outlet, and further comprising a third set of condenser tubes that are in fluid communication between said second manifold and said portion of said first manifold not communicating with said inlet and said outlet and adapted to carry said refrigerant both to and from said third portion and both to and from said second manifold.